

U.S. Ser. No. 09/955,253
Applicants: Kreutz et al.

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REMARKS

Claims 24-73 are presented. Claims 24, 37, 50 and 61 are independent. The present claims are supported by the embodiments and disclosure relating to Figs. 1-9. Claim 36 is amended.

Three new independent claims are added, claims 37, 50 and 61, which express the same patentable subject matter as claim 24 but rephrased slightly differently. Identical dependent claim sets, claims 38-47 and claims 51-60, are appended to each of claim 37 and 50, which are identical to the previously pending dependent set of claims 25-34. Furthermore, two dependent claims 48-49 are also appended to claim 37, which are identical to previously pending dependent claims 35-36.

The independent claim 61 is identical to claim 24 but omits reference to "flexible", and thus is broader than claim 24, and is supported e.g. by the embodiment of Figure 7. The dependent claim set 62-73 is identical to previously pending dependent set of claims 25-36 except that reference to "resilient" has been omitted from the dependent claims.

1. Rejection under §112, second para.:

Claim 36 is amended to correct an obvious typographical error; claim 36 was intended to have depended from claim 35, not claim 25. Since proper antecedence is now shown, it is requested that the rejection be withdrawn.

2. Rejection under §112, first para.:

a. Claim 24 is rejected for lack of "support in the specification for a vibration member having flexible protrusions on a carrier, whereby means for vibrating the carrier are provided." Essentially, in formulating the rejection Examiner has simply paraphrased the "characterizing clause" without precisely pointing out just what he finds lacking. Support will now be more precisely pointed out for claim 24, as well as for the new independent claims 37 and 50. If even after considering the remarks herein Examiner does not withdraw the rejection of claim 24, he is kindly requested to more precisely point out which of the structures or relationships in the above-

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quoted language he does not deem adequately supported, rather than merely paraphrasing the entire "characterizing clause" of the claim.

b. The term "flexible protrusion" is used broadly in the art:

It was noted in the previous First Preliminary Amendment that the claims herein are copied from claims 1-20 of U.S. Patent 6,165,182 (Caric et al.). Caric gives a special, broad definition to the claim term "flexible protrusion" which is likewise applicable here since the phrase can be so understood by one of ordinary skill in the art. Specifically, as the Caric disclosure acknowledges, the protrusions themselves do not have to be made of a resilient material (see column 10, lines 34-53). Rather, the claim term "flexible protrusions" is stated to equally embrace rigid protrusions mounted to the carrier by an elastically deformable element, or even that a part of the moving linkage supporting the rigid protrusions is either itself elastically deformable or that a linkage member is mounted on an elastically deformable element. To quote from that passage:

"In accordance with the invention, the protrusions 23 may alternatively be made from a relatively rigid material. In such an embodiment, e.g., the protrusions 23 are each disposed on the carrier 19 via an elastically deformable reduced portions of the protrusions 23."

Further, the Caric patent also gives as an example with respect to Figure 4 that the protrusions 23 be rigid, while the connecting rod 81 of the means 61 for vibrating the carrier 19 is provided with an elastically deformable element.

Thus, the protrusions are equally understood by one of skill in the art to be "flexible" if, as they impact the skin while in use, they satisfy any of the following conditions:

- 1) because they are inherently flexible; or
- 2) because they are rigid but the carrier is resilient; or
- 3) because they and the carrier are rigid but a portion of the vibration drive means is resilient.

c. The "carrier" can be understood in the art as part of the "means for vibrating ...":

Also, it is noted that the element "vibration member" is given the reference numeral 17 throughout the Caric patent (e.g., Fig. 1, Fig. 6). In each of the four disclosed embodiments, the "means for vibrating the carrier" (e.g. Fig. 4, 61; Fig. 6, 93) is what makes the vibration member 17 have any motion at all. For example, in the fourth embodiment of Figure 6, the yoke or lever 95

surrounding the mouth containing the depilation discs is caused by its cam follower 105, driven by rotating cam 99 under influence of bias spring 111, to swing relative to the housing back and forth

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between lateral stop surfaces 115, 117 over an arc of travel centered on pivot axis 97.

Furthermore, the "carrier" is simply the portion at the distal end of the assemblage near the skin surface connecting the protrusions to the vibrating means. Thus, the "carrier" can be part of the means to provide motion.

Thus, Caric has perhaps inelegantly formulated the claim by introducing a term which essentially gives two labels to one and the same structure (or he has simply named a structure and stated its inherent function), namely there need not be a separately identifiable vibrating "carrier" as long as there is some "means for vibrating the carrier"; furthermore, given that the term "flexible protrusion" must be broadly understood, as Caric himself acknowledges, to include a rigid distal free end as long as there is some resilient member elsewhere within its drive system, then any other linkage element within the "means for vibrating the carrier" that is disclosed in the present specification as being resilient is sufficient to support the claim.

d. The use of the terms in the present claims is consistent with their use in the Caric patent and their use as understood by one of ordinary skill in the epilator art:

The vibration member is disclosed as being made of resilient plastic material, as in the embodiment of Figure 8, specification at page 18, lines 1-4, or, alternatively (and equally supporting the claim feature), the vibration member is rigid and flexibly mounted on springs, as in the embodiment of Figure 5, which can be used with various embodiments shown in Figs. 1-2, or Figure 6, or Figure 7. In the Fig. 5 embodiment, the protrusions 16 are carried on hubs which are interconnected by shaft 31 (a "carrier") which is flexibly carried on part of rotary cylinder 10 by springs 32, see column 7, lines 37. In an alternative embodiment, individual protrusions, such as shown in Fig. 3 as wheels 28 disposed on a hub or carrier axle (unnumbered) are flexibly supported by springs 33 and carried as shown in Fig. 6 within slotted arms (unnumbered) for generally linear motion. These embodiments supporting claim 24 will be discussed in turn:

1. Support in the Embodiment illustrated by Figures 5-7 considered together

In the embodiment of Fig. 7 and 6 (or likewise Fig. 7 and 5), a spring-biased vibration member has its protrusions (hence "flexible protrusions") guided and vibrated by motion relative the eccentric

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cam surface 34, as described in the specification at page 16, line 24 to page 17, line 27, the relevant parts of that passage being reproduced here:

Various embodiments for generating the reciprocating movements of the element 16 are shown in Figs. 5 to 7.

...
In this arrangement, the spiral springs 33 in the embodiment of Fig. 5 are arranged approximately parallel to the direction 20 while the leaf springs 33 are arranged approximately transverse to the direction 20. In both embodiments the spring force of the springs 32, 33 acts radially outward approximately parallel to the direction 20 so that the elements 16 are always urged outward by the springs 32, 33 approximately parallel to the direction 20 into the advanced position.

In addition ..., it is possible in accordance with Fig. 7 to provide a cam track 34 with which the element 16 is coupled and by means of which the reciprocating movement of the element 16 is controlled. The cam track 34 results in the element 16 being moved approximately parallel to the direction 20 into the advanced position 23 directly before epilation. This occurs approximately when the element 16 is roughly opposite the skin 21. Preferably the element 16 is moved into the advanced position 23 as quickly or suddenly as possible by a suitable construction of the cam track 34. After the pulse is delivered the element 16 is moved back into its retracted position 22 by a suitable construction of the cam track 34.

The foregoing text passage discloses at least the following four (4) embodiments:

- a. Fig. 7 combined with Fig. 6 ("Fig. 7 & 6");
- b. Fig. 7 combined with Fig. 5 ("Fig. 7 & 5");
- c. Fig. 6 considered without Fig. 7; and
- d. Fig. 5 considered without Fig. 7.

Thus, the embodiment of Figures 7 & 6 discloses spring-biased protrusions 16. Their hubs or axles are disposed on a common shaft 31, which is a carrier, and this carrier shaft 31 is resilient because it is mounted by springs 32 (or equally by leaf springs 33 in the Fig. 6 construction). The carrier is supported resiliently to the depilation member 10, and the carrier is guided for reciprocating motion within the (unnumbered) slot formed in the finger-like (unnumbered) support. Figure 7 shows a view taken along this axis of this arrangement at another axial location closer to an end face, where there is shown in Fig. 7 the cam track surface 34 that engages the axial end of the shaft 31 (in a symmetric arrangement there is a cam track surface at each face of what is preferably a rotary depilation roller). As the depilation member 10 rotates relative the cam track 34, the cam track vibrates the carrier in and out to strike the skin (bi-directional arrow 20, Fig. 6).

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Thus, claim 24 is supported, and it is respectfully requested that the §112, 1st para. rejection be withdrawn.

New Claim 37 is also supported by the Fig. 7 & 6 embodiment since carrier shaft 31 is resiliently mounted such that during operation of the depilation member the carrier, and hence the protrusions, are vibrated up and down (bi-directional arrow 20, Fig. 6); the effect at the skin is impact by spring-loaded resilient protrusions.

Furthermore with respect to claim 24, the specification also contemplates that the protrusions 16 themselves are resilient. As shown in Fig. 4a-4b, the protrusions themselves are, in contrast to the monolithic protrusions depicted in Figs. 5-6 or Fig. 3, slotted into slender radial arms, and each of these stellate arms is tapered, hence the arms 30 are resilient. This is an additional example of support for "flexible protrusions".

Further support is seen in additional, other embodiments:

2. Support in the Embodiment of Figure 8, or the Embodiment of Figure 9.

a. The embodiment of Figure 8 discloses a protrusion 35 that is formed at the end 36 of a plastic living hinge, hence it is resilient. The specification states that "at least the free end 36 ... is of a resilient configuration, e.g. by being made of a plastic material.", see page 18, lines 1-3.

These resilient protrusions 35/36 are disposed on a carrier that is formed as a "threading device" 6 (essentially a semi-circular rib), which is a set of plastic ribs adjacent to the pinchers. These rib devices, or carrier, 6 are vibrated since each is constrained to a rotary motion, and thus is first moved angularly into close relation to the skin and then moved angularly further away from the skin, this motion being repeated cyclically, by the drive means for rotating the depilation member. This cyclic motion towards and away from the skin is a vibration of the carrier, and it causes the flexible protrusions to exert a vibrating mechanical impulse on the skin. Hence this embodiment also supports claim 24.

not done
by any
means,
only
force of
skin

b. In an alternative manner of considering this embodiment to support claim 24, the vibratory motion is realized through, and reinforced by, the fact that after the protrusion is forced against the skin by the centrifugal action of the rotating depilation member, then the skin, in

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conjunction with which the device is of course used, urges the protuberance 35 back against the inherent resilient force of the plastics material, as specifically discussed in the specification at page 18, lines 4-9, and the cycle repeats itself, hence it is vibratory. For this additional reason claim 24 is supported. It should be remembered that claim 24, just like Caric claim 1, specifically recites contact with the skin in the final two lines of the claim.

Claim 24 is also supported by the embodiment of Figure 9 for the same two reasons as articulated with respect to Figure 8, with the minor difference residing in that the protrusions are formed as bars 37, that are resiliently mounted by springs 38 to the carrier ribs 6 rather than integrally formed therewith out of resilient plastic. The bars 37 can also be collectively mounted to a further carrier 39 (longitudinal bar) which is resiliently mounted by springs 38 to the carrier 6 (formed as a rib). The Fig. 9 embodiment also supports claim 24.

New Claim 50 is also supported by Figure 8. The flexible protrusions are 35/36, and the carrier 6, especially the portion at the intersection of living hinge 36 and the undercut on rib 6, is cyclically brought towards and away from the skin; the protrusions are vibrated thereby.

3. Support in the Embodiment of Figure 6 considered alone (without cam track of Figure 7).

The embodiment of Figure 6 is disclosed, alternatively, without the cam track of Figure 7 that provides an active vibrating drive. This is clear from page 17, lines 15-17, which states, after discussing the Fig. 6 embodiment, that the provision of the cam track 34 shown in Fig. 7 is an "alternative", i.e., although the cam track 34 of Fig. 7 can be used optionally "in addition" to the Fig. 6 embodiment, such combination is not the only disclosed embodiment. Thus, the Fig. 6 embodiment by itself discloses a vibration member. The skin-impacting elements 16 provide the protrusions. The central axle 31 connected to spring 33 together are seen as support for a flexible carrier. Hence there is also disclosed flexible protrusions. The means for vibrating the carrier is seen in that the spring 33 is built into a part of the roller that is connected to, and rotates with, the pinchers on the depilation roller; thus, as this rotates, centrifugal force pushes the carrier shaft 31 and spring 33 outward; as stated at page 16, line 30-page 17, line 3, the protrusions 16 advance through centrifugal force into the advanced position 22 (the position numbers are shown in Figs. 2 and 7), and when the rotary means then moves the elements into skin-striking position, the carrier

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shaft 31 and spring 33 as well as protrusions 16 are urged back by the skin into the retracted position shown by 22. The reciprocating displacement between the retracted and advanced positions is a vibration, shown by bi-directional arrow 20. Thus there is a means for vibrating the carrier. The depilation device is of course intended to be used in contact with skin, so it is of no consequence that the motion is not kinematically solely defined by the linkage as if they were acting in a vacuum; the fact that the motion is kinematically undefined is consistent with the disclosure of the linkages in the Caric patent that read on this claim. For example in Caric the embodiment of his Figure 6 has a kinematically indefinite position, see column 10, lines 19-22 (position of carrier 95 /19 is indefinite), and column 11, lines 21-27, where he admits that the end piece's position depends on the contact force between the device and the skin. Likewise the embodiment of his Figure 4, where it is stated at column 8, lines 53-67, that "the amplitude and central position of the carrier 19 relative to the housing are not kinematically defined" and that the amplitude "depends on the external load exerted on the carrier" and that its central position changes when it "is brought into contact with the skin". Hence one of ordinary skill, given the understanding of these terms in the art, would appreciate that this embodiment also supports claim 24.

New Claim 50 is also supported by the Figure 6 embodiment since protrusion 16/spring 33 can be considered the flexible protrusion, the carrier is the portion of the depilation member on which the spring 33 is attached and supported (shown as built-in by hatched lines), and in use this support portion is cyclically brought towards and away from the skin.

3. New Claims 37, 50

a. New Claim 37

Support is seen e.g. in the embodiment of Figure 7 & 6 as previously discussed above; Examiner is referred to the detailed discussion in section 2.(d).(1.) as applied to claim 37 above.

Support is also seen in other embodiments discussed above, and reference is made to the foregoing discussions, which are briefly summarized here:

Support is seen in the Figure 8 embodiment, wherein the protuberances can be considered to be the protrusions, the living hinge portion 36 to be the carrier, and the rib 6 coupled for rotary motion to the depilation member to be the drive means.

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Support is also seen in Figure 9 (protrusions 37; carrier 39 mounted by spring 38 to rib 6 constrained to rotate).

b. New Claim 50

Support is seen e.g. in the embodiment of Figure 8 as previously discussed above. Examiner is referred to the detailed discussion in section 2.(d).(2.) as applied to claim 50 above. Briefly re-stated, the flexible protrusions are 35/36, and the carrier 6, especially the portion at the intersection of the living hinge 36 and the rib 6, is cyclically brought towards and away from the skin. The flexible protrusions are vibrated thereby.

Support is also seen in either of the Figure 6 or Figure 5 embodiments: protrusions 16; carrier shaft 31 is resiliently mounted by springs (32 or 33) to ribs 6 on the depilation member (shown in Fig. 1, where the protrusions 16 protrude therethrough) which are constrained to undergo rotary motion along with the depilation member, the centrifugal force and skin interaction causing vibrating motion shown by bi-directional arrow 20.

4. Correspondence to Caric claims

As mentioned already in the Preliminary Amendment, the invention of the present claims has as its purpose, just as Caric '182 states at column 5, lines 16-30, that the painful stimulus of the hair tweezing is overcome or anaesthetized by overloading the nerve pathway by the additional imposed vibratory stimulus to massage the skin in a comfortable manner. The present application identically states that the overlaid pulse overshadows the actual epilating pain by saturating the nerve, see carryover text at page 2, lines 15 to page 3, line 8.

Thus, claims 37, 50 and 61 are also supported and not patentably distinct from claim 24 and Caric claim 1. Indeed, claim 61 is broader than and encompasses Caric claim 1. The dependent set of claims 38- 49 is identical to and not patentably distinct from previously pending dependent set of claims 25-36. The dependent set of claims 51- 60 is identical to and not patentably distinct from previously pending dependent set of claims 25-34. The dependent set of claims 38- 49 is identical

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to, except for the omission of the feature "resilient" in several occurrences (and hence broader than) and not patentably distinct from, previously pending dependent set of claims 25-36.

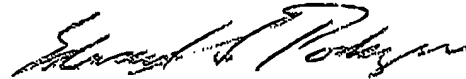
Since there were no other rejections, the claims are believed allowable and in condition for allowance. If Examiner would make any further objections, then prior to issuance of a further official action, it is respectfully requested that Examiner telephone the undersigned, who will endeavor to work with Examiner to resolve any outstanding issues in a phone conference.

It is believed that an Interference should be instituted as discussed in the Remarks to the First Preliminary Amendment, and the Examiner and Board are encouraged to read Applicants' extensive remarks comparing the application claims to those of Caric in that previous paper. The undersigned would appreciate either a telephonic or written communication from Examiner regarding the status of the application at such time that Examiner finds the claims to be in an allowable condition.

If a telephone conference would helpfully advance prosecution, the Examiner is invited to telephone the undersigned at 617-421-7939. Please apply any charges or credits to Deposit Account No. 07-1350.

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APPENDIX

Marked-Up Version showing additions and deletions

--36. (Amended). A depilation apparatus as claimed in claim [2]35, characterized in that the mechanical spring is a helical spring extending substantially perpendicular to the first axis.--